What is Claimed Is:

1.   A method for down-converting and de-spreading a received spread spectrum signal, comprising the steps of:

(1)   receiving the spread spectrum signal; and

(2)   sampling the received spread spectrum signal according to a control signal resulting in a de-spread baseband signal, wherein said control signal includes a spreading code corresponding to said received spread spectrum signal, and wherein pulses of said control signal include pulse widths that are established to improve energy transfer to the de-spread baseband signal.

2.   The method of claim 1, wherein step (2) comprises the steps of:

(a)   sampling the received spread spectrum signal at a rate that is a sub-harmonic of the received spread spectrum signal, resulting in under-samples; and

(b)   storing said undersamples in a storage module, wherein successive undersamples form the de-spread baseband signal.

3.   The method of claim 2, wherein step (a) comprises the step of operating a switch according to said control signal.

4.   The method of claim 2, wherein step (b) comprises the step of charging a capacitor with said undersamples.

5.   The method of claim 1, wherien step (2) comprises the step of transfering non-negligable amounts of energy from said spread spectrum to to the baseband signal according to said control signal.

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6.   The method of claim 1, wherein said pulse width of said control signal is a non-negligible fraction of a period associated with the received spread spectrum signal.

7.   The method of claim 1, wherein said pulse width of said control signal is approximately ½ of a period associated with said received spread spectrum signal.

8.   The method of claim 1, wherein said spreading code is a PN code.

9.   The method of claim 1, wherein said step (2) comprises the steps of:
        (a)   generating an oscillating signal;
        (b)   generating a spreading code;
        (c)   modulating said oscillating signal according to said spreading code, resulting in a spread oscillating signal;
        (d)   triggering a pulse generator according to said spread oscillating signal, wherein pulses from said pulse generator have a pulse width established to improve energy transfer to the de-spread baseband signal.

10.   The method of claim 9, wherein said step (d) comprises the step of widening said pulse width by a non-negligible amount that tends away from zero time duration.

11.   The method of claim 9, wherein said step of widening said pulse width comprises approximately ½ of a period associated with the received spread spectrum signal.

12.   The method of claim 1, wherein said spreading code is a PN code.

13.   An apparatus for down-converting and de-spreading a spread spectrum signal, comprising:

     (1)   a spreading code generator for generating a spreading-code; and

     (2)   a universal frequency down-conversion (UFD) module coupled to said spreading code generator, comprising:

          (a)   a switch controlled by a control signal to undersample said spread spectrum signal, resulting in an undersample, wherein said control signal carries said spreading-code; and

          (b)   a storage device coupled to said switch to store said undersample, wherein successive under-samples form said de-spread baseband signal.

14.   The apparatus of claim 13, further comprising:

a pulse generator coupled to said UFD module, comprising a means for generating said control signal having a plurality of pulses with a corresponding pulse width established to improve energy transfer from the spread spectrum signal to the de-spread baseband signal.

15.   The apparatus of claim 14, wherein said storage device is one of a capacitor and an inductor.

16.   An apparatus for down-converting and de-spreading a spread spectrum signal, comprising:

     (1)   an oscillator for generating an oscillating signal;

     (2)   a spreading code generator for generating a spreading code;

     (3)   a modulator coupled to said oscillator and said spreading code generator for generating a spread oscillating signal using said oscillating signal and said spreading code;

8   (4)   a pulse generator coupled to said modulator, for generating a control

9   signal using said spread oscillating signal; and

10   (5)   a universal frequency translation module coupled to said pulse

11   generator, comprising:

12   (a)   a switch controlled by said control signal to undersample said

13   spread spectrum signal; and

14   (b)   a storage device coupled to said switch to store undersamples

15   from step (5a), wherein successive under-samples form a de-spread baseband signal.